

## Title (en)

Efficient electron-donating groups for nonlinear optical applications.

## Title (de)

Effiziente elektronenabgebende Gruppen für nichtlinear optische Anwendungen.

## Title (fr)

Groupes donneurs d'électrons efficaces pour des applications optiquement non-linéaires.

## Publication

**EP 0602654 A1 19940622 (EN)**

## Application

**EP 93120340 A 19931216**

## Priority

US 99262592 A 19921218

## Abstract (en)

Nonlinear optical materials having structures with delocalized resonance configurations corresponding to: <CHEM> or: <CHEM> wherein A is a first electron accepting group, R is pi-conjugated non-centrosymmetric organic moiety; R4 and R5 are independently selected from hydrogen, alkyl moieties and functionalized alkyl moieties; E, F, G and H are members of a saturated or unsaturated five- to ten-membered cyclic ring or two-ring systems having five- to ten-membered rings that are electron donating in nature and E, F, G and H are independently selected from -CH-, -CH2-, O, S, N, Se, Te, and -NR2-, wherein R2 is selected from hydrogen, alkyl moieties and functionalized alkyl moieties; and R1 is selected from alkyl moieties and functionalized alkyl moieties. Polymers blended with or having the disclosed nonlinear optical materials as pendant side chains and exhibiting second order nonlinear optical properties are also disclosed.

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## Citation (search report)

- [DA] EP 0493716 A1 19920708 - DONEGANI GUIDO IST [IT]
- [A] EP 0357783 A1 19900314 - SUMITOMO ELECTRIC INDUSTRIES [JP]
- [A] EP 0364313 A1 19900418 - RHONE POULENC CHIMIE [FR]
- [A] EP 0422900 A2 19910417 - TOSHIBA KK [JP]
- [A] H.E.KATZ, C.W.DIRK ET AL.: "exceptional second-order nonlinear optical susceptibilities in organic compounds", SPIE, ADVANCES IN NONLINEAR POLYMERS AND INORGANIC CRYSTALS, LIQUID CRYSTALS, vol. 824, 1987, pages 86 - 92

## Cited by

CN115386081A; EP0791849A1; EP0729056A1; US5679763A; AU696081B2; US10395841B2; US10305295B2; US9852846B2; WO0163352A1; US10340082B2; US10685782B2; US9916931B2; US10347423B2; US6623665B1; US10026553B2; US9941051B2; US10672561B2; US10854386B2; US9978517B2; US10707019B2; US10872733B2; US9899150B2; US9932358B2; US10153087B2; US10347424B2; US10672560B2

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